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The key drivers for managing sustainability-related knowledge: an empirical study

Charles Egbu,
School of the Built Environment,
University of Salford, Salford, UK (email: c.o.egbu@salford.ac.uk)
Suresh Renukappa,
School of the Built and Natural Environment,
Glasgow Caledonian University, Glasgow, UK, (email: Suresh.Renukappa@gcal.ac.uk)

Abstract

Periodically, new major forces dramatically reshape the business world. Just as globalisation, the information technology revolution and the knowledge economy have been doing for the past two decades. In the early part of this twenty-first century, the most important pressures facing businesses worldwide, especially those in the developed world, is arguably the need for integrating sustainability issues into daily business operations. For businesses, the creation of economic value by integrating corporate social and environmental responsibility issues now increasingly pose real profound strategic challenges. These complex challenges involve numerous processes carried out and influenced by many stakeholders to set the tone and guide corporate level decisions. As organisations try to meet these complex challenges, they need to be innovative. This often calls for the creation, use and exploitation of new knowledge. Therefore, knowledge resources must be properly managed to provide an environment for well-informed decisions. Much of the sustainability related knowledge evolves around on-going learning from the actions taken by managers and stakeholders who enact the organisation's sustainability-related change initiatives.

This paper primarily reports on the empirical findings of an on-going research study, which is focused on managing change and knowledge associated with sustainability initiatives for organisational competitiveness. The paper focuses on the key drivers that have fuelled the need for managing sustainability-related knowledge. The findings are, in the main, based on semi-structured interviews with fifty-nine professionals from forty UK organisations in four sectors – energy and utility, transportation, construction, and not-for-profit organisations. The paper concludes that identifying and understanding the key drivers for managing sustainability-related knowledge is a complex process. The key drivers for managing sustainability-related knowledge as revealed by the current study are to improve accessibility to sustainability-related knowledge, to identify sustainability-related knowledge assets, to improve the flow of sustainability-related knowledge, to build sustainability-related skills and capabilities and to capture key sustainability-related knowledge.

Keywords: knowledge capture, knowledge mapping, knowledge sharing, sustainability

1. Introduction

Today, only few executives in business would doubt that economic, social and environmental sustainability issues will be the defining business drivers for organisations in the first part of the twenty-first century. This is primarily due to: recent credit crunch; global economic turbulence; raising oil prices; meeting increased demands and expectations of stakeholders; protecting degradation of natural resources; the knowledge economy; managing crisis and remediation while defending the organisation; and the diminishing social and community structures [7][24]. These complex issues involve numerous processes. They also influence many stakeholders and further help to set the tone and guide corporate level decisions. Nevertheless, to businesses these are formidable environmental and social issues that have evolved over time and that must be addressed [6]. To address the above issues and challenges, sustainability offers business leaders a twenty-first century management framework. Sustainability is a management principle that aims to create long-term shareholder value by seizing opportunities and managing risks related to the economic, environmental, and social impact of doing business [32].

Today, organisations can succeed only if they are genuinely 'value-led' and adopt a holistic rather than a silo approach to social, economic and environmental issues. As noted by Drucker [12], 'every single pressing social and global issue of our time is a business opportunity'. The above statement clearly conveys that organisations that successfully embrace the sustainability agenda and integrate it into their daily business operations will thrive. Sustainability is not just about doing well by doing good. It is about doing better by doing good. It is no longer just about doing business responsibly; it is about seeing social, economic, and environmental sustainability challenges as opportunities for innovation and business development [24]. As Kanter [22] noted, organisations that are breaking the mould are moving beyond corporate social responsibility to social innovation. They view community needs as opportunities to develop ideas and demonstrate technologies, to find and serve new markets, and to solve long-standing business problems.

In contrast to conventional market-driven innovation, sustainability-related innovation must incorporate the added constraints of social and environmental pressures as well as consider future generations [4]. Sustainability-related innovation is therefore usually more complex (because there is typically a wider range of stakeholders) and more ambiguous (as many of the parties have contradictory demands). As organisations try to meet these challenges, knowledge is increasingly being seen as important for innovation and for producing knowledge intensive products and services desired by market so as to maintain competitive advantage. The management of knowledge is, therefore, increasingly considered an important source of sustainable competitive advantage [28][17].

Van der Spek and Kingma [36] state that the main objective of knowledge management (KM) is to arrange, orchestrate and organise an environment in which people are invited and facilitated to apply, develop, share, combine and consolidate knowledge. This application of knowledge in turn leads to innovation in the organisation. Knowledge management will allow businesses to sense important opportunities that can result in innovations in products, services, processes and

distribution channels [35]. Therefore, to attain the goals concerning sustainability, it is necessary to recognise the importance of intangible resources, such as people and their sustainability-related expertise.

Davenport and Prusak [9] view knowledge as an evolving mix of framed experience, values, contextual information, and expert insight that provides a framework for evaluating and incorporating new experiences and information. They found that in organisations, knowledge often becomes embedded in documents or repositories and in organisational routines, processes, practices, and norms. They also say that in order for knowledge to have value, it must include the human additions of context, experience, and interpretation. Alavi and Leidner [1] in their seminal work concluded that KM involves distinct but interdependent processes of knowledge creation, knowledge storage and retrieval, knowledge transfer, and knowledge application. Similarly, Jennex [21] defined KM as the practice of selectively applying knowledge from previous experiences of decision making to current and future decision-making activities with the express purpose of improving the organisation's effectiveness. However, for the purpose of this research, KM is defined as "a systematic and integrative process of coordinating the organisation-wide activities of mapping, capturing, and sharing knowledge by individuals and groups in pursuit of the major organisational sustainability (environmental, economic, and social) goals and objectives [29].

The ability to identify and leverage key sustainability-related knowledge plays a critical role in leading change towards sustainability. At present it is not well understood how sustainability-related knowledge can be effectively brought together, managed and shared for effective decision making [25]. A major challenge facing most organisations is uncovering the most effective methods of mapping, capturing, sharing and applying new knowledge en route to economic value creation (e.g. profit maximisation) by integrating corporate environmental (e.g. climate change) and social (e.g. community engagement) sustainability issues into business.

Authors such as Gloet [16], Doppelt[11] and Dunphy, et al. [13], emphasised that in fostering sustainability in the so-called knowledge economy, there is a need to consider how best to make knowledgeable interpretations and recommendations to support sustainability issues across a wide range of stakeholders. Even though most businesses now recognise that sustainability is conceived as a holistic and integrative concept, there are considerable ambiguities and interconnectivities among various facets of environmental, social and economic sustainability issues. Disagreements persist regarding the 'solutions' to sustainability 'problems', and the conditions under which one alternative might be better than another. However, a primary issue for organisations is knowing what they know related to sustainability. Even providing easy access to explicitly captured sustainability related knowledge in artifacts such as written government policies and measures document; corporate economic, environmental and social policy documents; and even presentations, can provide employees in organisations with tremendous effectiveness and efficiency. However, as Renukappa and Egbu [29] noted, knowledge management in a sustainability context is in its infancy and has the potential to address a number of challenges that organisations currently face with regard to sustainability in the UK.

Even though many authors argue that access to, and, effective use of knowledge is a critical element in shaping and managing change and in transitions toward sustainability there is little empirical research on the key drivers that have fuelled the need for managing sustainability-related knowledge in UK organisations, which is the aim and the research question posed by the authors of this paper. In the study reported here, four standard industry classification sectors are identified based on the environmental, social and economic account of the urban environment. The sectors considered for this study are energy and utility, transportation, construction, and not-for-profit organisations.

2. Research aim and method

This paper draws from an on-going doctoral study entitled "managing change and knowledge associated with sustainability initiatives for organisational competitiveness". The aim of this research is to investigate how companies are managing change and knowledge associated with sustainability initiatives so as to improve their competitiveness. In order to achieve the aim and objectives of this research, a robust methodology is essential. Broadly, the research process is identified into three key phases within its flexible boundaries. The three phases are the literature review, the pilot study and the main study. The development of the research work started with the literature review. The review of literature involved background study on change management, knowledge management and in varied areas of sustainability. This resulted in the development of a theoretical framework. In this research study, prior to the main study, a pilot study was undertaken which helped with refining data collection plans with respect to both the contents of the data and the procedure to be followed. Denzin et al. [10] suggested that when there is a high degree of unpredictability, a pilot study is a good means to add value to the research. A pilot study allowed the researcher to focus on particular areas that may have been unclear previously [39]. The initial time frame of the pilot study also allowed the researcher to develop and solidify a rapport with the participant as well as to establish effective communication.

This paper is based on the results from both the pilot (26 interviews from 17 organisations) and main (33 interviews from 23 organisations) study. Therefore, a total of fifty-nine professionals from forty UK organisations across four industry sectors – energy and utility, transportations, construction and Non-governmental organisations were interviewed. The current study, which is reported in this paper, was interview-based and semi-structured in format. Semi-structured interviews provide some flexibility and it is one of the ways to obtain a realistic picture of an individual's view [26]. Those who participated included board members, directors, advisers and managers responsible for corporate environmental, social and economic sustainability initiatives in organisations. The interviews in the current study lasted between thirty and ninety minutes. The format of these interviews was face-to-face. All face-to-face interviews were recorded with permission and later transcribed.

As part of the analysis of the interviews, content analysis was employed. The content analysis began as a tool for quantitative researchers, now it is increasingly being used in qualitative

studies [33]. Weber [38] defined content analysis as "a research method that uses a set of procedures to make valid inferences from text". Using content analysis enabled the researcher to include large amounts of textual information and systematically identify its properties, e.g. the frequencies of most used keywords in context by detecting the more important structures of its communication content. This paper presents the key drivers that have fuelled the need for managing sustainability-related knowledge in the UK organisations.

3. The key drivers for managing sustainability-related knowledge

Table 1 presents the key drivers that have fueled the need for managing sustainability-related knowledge as revealed by those interviewed in this study.

Table 1: The key drivers for managing sustainability-related knowledge

Key drivers for managing sustainability-related knowledge	Percentage of interviewees cited (N= 59)
To improve accessibility to sustainability-related knowledge	93%
To identify sustainability-related knowledge assets	88%
To improve the flow of sustainability-related knowledge	81%
To build sustainability-related skills and capabilities	75%
To capture key sustainability-related knowledge	68%

From the data in Table 1, it is evident that the single most important driver for managing sustainability-related knowledge is to improve accessibility to sustainability-related knowledge. This is followed by the need to identify sustainability-related knowledge assets, to improve the flow of sustainability-related knowledge, to build sustainability-related skills and capabilities and to capture key sustainability-related knowledge. In the following sub-sections (3.1 to 3.5), each of these key drivers is discussed in detail.

3.1 To improve accessibility to sustainability-related knowledge

In the current study, overwhelmingly, 93 percent (55 of the 59) of the interviewees agreed that a key driver for managing sustainability-related knowledge in their organisations is to improve efficiency and effectiveness of accessing critical sustainability-related knowledge. For instance, in the current study, one of the interviewees stated that: "in our organization, finding who has the right sustainability-related expertise to solve critical business problems is harder. The experiential sustainability-related knowledge that people carry around in their heads is scattered across the company (i.e. all over Europe and USA), and it is nearly impossible to find the right

people unless they are already part of the employee's personal network. When employees can not find the right sustainability expertise or solution, they must either spend time and effort to recreate that solution or settle for something sub-optimal."

Analysis of the above statement reveals that one of the key drivers for managing sustainability-related knowledge is to improve accessibility to sustainability-related knowledge. As Hunt [20] suggests knowledge map may provide a possible answer to the challenges of how to locate new forms of useful knowledge, and the flow of knowledge within and across organisations, including new directions for training employees, linking sustainability experts, innovative sustainability techniques and technologies, stimulating and facilitating knowledge sharing, and establishing useful links with external stakeholders.

In today's fast-paced economy, an organisation's knowledge base is quickly becoming its only sustainable competitive advantage. As such, this resource must be protected, cultivated, and shared among organisational members [8]. Knowledge is required for more effective and efficient management decision-making regarding sustainability issues [15]. Until recently, companies could succeed based on individual knowledge of a handful of strategically positioned workers. Increasingly, however, competitive advantage can be gained by making individual knowledge available within the organisation, transforming it into organisational knowledge.

Decisions in today's world are taken under tremendous pressure and in a short time frame. Many organisations are implementing knowledge management to ensure that decisions makers have adequate and relevant knowledge at their finger tips to ensure good-quality decision making. Often, however, an organisation creates so much material that effectively organising it is a daunting task [34]. The distributed nature of organisations makes it very hard to get a clear and complete overview of the knowledge that is available within organisations. According to KPMG [23], 6 out of 10 employees find accessing undocumented knowledge a major problem. Therefore, professionals find it difficult to access core knowledge for highly knowledge intensive activities, such as problem-solving and decision-making. This situation calls for knowledge mapping to increase the visibility of knowledge sources and hence facilitate and accelerate the process of locating relevant expertise or experience [30].

Essentially, a knowledge map improves efficiency and effectiveness of accessing critical knowledge en-route the re-use of ideas and processes. For example, climate change touches at the very heart of political and economic structures in recent times. It challenges business readiness to change from the current carbon-high economy to one of significantly reduced or zero emissions. It also challenges businesses ingenuity. The solutions are out in the market. But business needs to zoom in on them, thoroughly explore them and put the best ones to use. Knowledge maps zoom in on what already exist in organisations or within network actors.

3.2 To identify sustainability-related knowledge assets

In the current study, 88 percent (52 of the 59) of the interviewees noted that another key driver for managing sustainability-related knowledge in their organisations is the need to identify internal and external sources of sustainability-related knowledge assets. The most often cited reasons for managing internal and external sources of knowledge is to initiate management systems like ISO 14001 system, energy management system, and employee health and safety to name a few. For example, one of the interviewees in the current study stated that: "recently we have identified the knowledge gaps for deploying ISO 14001 system in our firm. By doing so, we have developed a map mainly focusing on what environmental related knowledge assets are available within our firm, who knows what and where it is located and how missing knowledge needs to be filled".

The process of linking business goals and strategies together with organisational sustainability-related knowledge assets is where the power of knowledge mapping lies. Identifying or highlighting existing sustainability-related knowledge is a critical step in knowledge management. Organisations that audit and map their sustainability-related knowledge assets and as a consequence know what they know can gain many benefits [37][5][18]. Mapping knowledge provides a way of organising sustainability-related knowledge assets that is operational as well as replicable. It is a means of reducing barriers in accessing sustainability-related knowledge assets. Knowing who to call, who knows what key facts and figures related to sustainability issues, or who has the know-how or the skill to analyse, diagnose, or recommend appropriate solutions in a particular sustainability domain is a challenge.

Many existing knowledge management studies are, arguably, focused on internal knowledge management processes, and some how seemingly neglect the interface between internal and external sources and knowledge processing issues [27]. However, issues related to sustainability crosscut many boundaries, as they are both trans-disciplinary and trans-organisational in nature. In dealing effectively with sustainability issues, a wide range of internal and external knowledge assets need to be taken into consideration (e.g. issues across organisations, industry sectors, national boundaries, national and international institutions and regulatory agencies). Therefore, organisations must integrate external knowledge quickly and smoothly along with internal knowledge generation and sharing [27].

3.3 To improve the flow of sustainability-related knowledge

Accelerating knowledge flow in organisations is a fundamental research issue in the filed of knowledge management [3]. To address sustainability issues, organisations need to acquire and make use of knowledge about the environmental (e.g. waste reduction), social (e.g. social responsibility) and economic (e.g. resources efficiency) sustainability issues. For example, organisations need to achieve a better understanding of the flow of materials and energy in production systems and better information on waste sources and uses. Capturing this information and the knowledge of how to use it will allow broader reuse opportunities and

greater potential for waste minimisation to be incorporated into the product design process. The real value of knowledge management emerges when employees share their interpretations and insights about better process and materials management [29].

In the current study, 81 percent (48 of the 59) of the interviewees echoed that another key driver for managing sustainability-related knowledge in their organisations is to trace the flow of critical sustainability-related knowledge within and between stakeholders. For example, one of the interviewees in the current study noted that "recently, we have developed a knowledge flow map to understand the way knowledge is used and created during disaster management and then make recommendations as to how the organisation's regional and main office can strengthen ways of working during emergency incidents like tsunami, terrorist's attacks or even during earthquakes". Knowledge maps can help in the recognition of barriers to the flow of sustainability-related knowledge within and across organisations. For example, often 'green products' draw on used components; these are then tested, re-engineered and reassembled into 'new' products while ensuring that the production process and the products do not have adverse social and environmental effects. However, to produce a reengineered product as good as, or better than new, and to meet the new sustainability challenges require some new knowledge. Knowledge maps can quickly connect experts with each other or help novices identify experts promptly. As a consequence, knowledge maps can speed up the knowledge seeking process and facilitate systematic knowledge development since they connect insights with tasks and problems.

3.4 To build sustainability-related skills and capabilities

A sustainable organisation excels on the traditional scorecard of return on financial assets and shareholder and customer value creation. It also embraces community, the environment, and stakeholder success [19]. The new concept of triple bottom line requires executives to manage entire value chain impacts from raw materials purchase to product/service end-of-life. It also requires them to listen to societal stakeholders that they previously may have considered to be marginal or irrelevant to their business decision-making. However, many executives lack the requisite mindset and capabilities needed to embed a sustainable value perspective into an organisation's day-to-day activities. Therefore, it is necessary for organisations to build their sustainability-related skills and capabilities [11].

In the current study, 75 percent (44 of the 59) of the interviewees asserted that another key driver for managing sustainability-related knowledge is to build their sustainability-related skills and capabilities. For instance, one of the interviewees in the current study noted that: "our company's aim is to become the most successful environmentally, socially and economically sustainable UK organisation. To achieve this aim, we needed to build strong sustainability-related skills and competencies of our workforce. Therefore, five years back we implemented a knowledge management programme. The main goal of this knowledge management programme is to build our staff skills and capabilities through sharing sustainability-related best practices". Analysis of the above statement reveals that one of the key drivers for managing sustainability-

related knowledge is to build sustainability-related skills and capabilities. As Saint-Onge and Wallace [31] have argued, knowledge management is about the development of corporate skills and capability, which is essential if an organisation is to develop and lead its market rather than endlessly work to keep up with the demand. Therefore, managing sustainability-related knowledge will help to build skills and capacity to respond to rapidly changing sustainability issues and conditions through innovative approaches.

3.5 To capture key sustainability-related knowledge

Employees change jobs more readily in today's working environment. When they leave, they take their knowledge and experience with them, leading to knowledge attrition in the organisation. According to Dalkir [8], organisations are now focusing on managing the knowledge through knowledge management programmes and systems, rather than persuading employees to remain in the organisation. This will be especially important in organisations that view knowledge as a strategic asset.

In the current study, 68 percent (44 of the 59) the interviewees noted that a key driver for managing sustainability-related knowledge is to capture key employees and stakeholders' sustainability-related knowledge. This is not surprising given the fact that knowledge capture techniques are used to protect the firm's loss of knowledge due to worker's departure. For instance, one of the interviewees noted that: "we have implemented knowledge capture initiative in our organisation. The very purpose of this initiative is that before an employee retires or leaves the organisation, we ask them to fill a questionnaire, participate in exit interviews, and to write down key sustainability-related contacts. By doing this not only do we attempt to retain his/her knowledge, we also see this as an opportunity to gain from the investments that have been made in the development and training of that individual". Analysis of the above statement reflects the increasing fluctuation of the workforce as well as the growing importance of sustainability-related knowledge as a strategic asset. Systematic capturing and sharing of key sustainability-related knowledge makes strong business sense for organisations [14] [2].

4. Conclusion

To improve organisational sustainability-related performance, executives have to recognise and better understand the key sustainability-related knowledge assets available within and across organisations. It is critical for organisations to understand the key drivers before implementing sustainability-related knowledge management initiatives. If organisations do not fully comprehend what drives the need for managing sustainability-related knowledge, they may fall into the trap of creating an inefficient knowledge management strategy and operational plans. The paper concludes that identifying and understanding the key drivers for managing sustainability-related knowledge is a complex process. As revealed in the current study, the key drivers for managing sustainability-related knowledge are broad, but five key drivers stand out.

They are: to improve accessibility to sustainability-related knowledge, to identify sustainability-related knowledge assets, to improve the flow of sustainability-related knowledge, to build sustainability-related skills and capabilities and to capture key sustainability-related knowledge. Given that the research reported in this paper is largely exploratory in nature, the results presented here are only tentative and of limited value for the purpose of generalisation. Therefore, additional research with more elaborate and better articulated designs is therefore called for, to further explore the complex mix of key drivers that have fuelled the need for managing sustainability-related knowledge.

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